



Minnesota Plant Press

The Minnesota Native Plant Society Newsletter

Volume 25 Number 1

Fall 2005

Monthly meetings

Minnesota Valley National Wildlife Refuge
Visitor Center, 3815 American Blvd. East
Bloomington, MN 55425-1600
952-854-5900

6:30 p.m. — Building east door opens
6:30 p.m. — Refreshments,
information, Room A
7 – 9 p.m. — Program, society business
7:30 p.m. — Building door is locked
9:00 p.m. — Building closes

Programs

The MNPS meets the first Thursday in October, November, December, February, March, April, May, and June. Check the Web site for more program information.

Nov. 3: “Plant Communities of the Mississippi River Gorge,” by Karen Schik, ecologist with Friends of the Mississippi River and MNPS board member. **Seed Exchange.** Labels should include your name, common and scientific names of plant, seed origin (nursery name if plant was purchased, or city/county location) and habitat (prairie, savanna, wetland, woodland).

Dec. 1: “Moonwort Madness, Part II,” by Cindy Johnson-Groh, biologist, Gustavus Adolphus College. This is an update of her 1999 program on this interesting Minnesota fern.

Feb. 2: To be announced

New MNPS Web site

www.mnnps.org
e-mail: contact@mnnps.org

MNPS Listserve

Send a message that includes the word “subscribe” or “unsubscribe” and your name in the body of the message to:
mn-natpl-request@stolaf.edu

Wild lupine has key role in saving endangered Karner blue butterfly

Wild lupine, *Lupinus perennis*, is the only plant eaten by the caterpillars of the endangered Karner blue butterfly, *Lycaeides melissa samuelis*. Efforts to preserve the Karner blue are underway in Minnesota, which is at the western edge of the butterfly’s traditional range. Today it can be found in two valleys in the Whitewater Wildlife Management Area near Winona. Until the early 1980s, a colony of Karner blues also existed alongside a gravel road in Cedar Creek Natural History Area in Anoka County. Then the wild lupine was scraped off by a grader during a road improvement project, and the butterflies vanished.

The topside of the male Karner blue is silvery or dark blue with narrow black margins; the female’s topside is grayish brown to blue, with irregular bands of orange crescents inside the narrow black border. They were named for the vanished upstate New York hamlet of Karner, where millions of the butterflies once flocked. The inch-wide insects were once plentiful in a narrow swath of oak savanna and pine barrens in 12 states from Maine to Minnesota and in Canada. They are now found in isolated pockets in seven states. Wisconsin is a leader in the preservation efforts.

In Minnesota, current efforts to preserve the Karner blue are focused on restoring oak savannas that have open patches in tree canopies and sandy soil where wild lupine thrives. Jaime Edwards, a nongame wildlife specialist with the Minnesota DNR, has been working in the Whitewater area for about five years, endeavoring to recreate the habitat that Karner blues prefer. She said that Minnesota may have started its conservation efforts too late. “We’re really playing catch-up to get the habitat in shape before we lose the butterfly,” she said.

Minnesota preservation efforts began in the 1990s, when Cynthia Lane studied the Karner blue for four years while pursuing a doctorate in conservation biology at the University of Minnesota. She learned the insect’s life cycle, which includes two generations a year, and the varied habitat of sun, partial shade and dense shade that it requires.

For additional information, go to www.fws.gov/Midwest/Endangered/ or to Maja Beckstrom’s article in the Sept. 25, 2005, St. Paul Pioneer Press.

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Plant identification system on CD-ROM is available to members at discounted price

by Ron Huber

A new expert identification system for Minnesota plants is available on CD-ROM and may be purchased at a discount by members of the Minnesota Native Plant Society.

Flora ID Northwest, Minnesota is an interactive key developed by Bruce Barnes that allows the user to identify a plant using any number of different characteristics, such as leaves, stem, inflorescence, flower or fruit. It has color photos of almost all Minnesota native and introduced naturalized plant species. Detailed descriptions and geographic ranges for each species are included, as well as some line drawings. For a description and demo, go to: www.xidservices.com/FID

The CDs (for Windows 98 through XP) are available for purchase, by members only, through the Minnesota Native Plant Society for \$70. The regular price is \$100. A portion of the proceeds will support the society.

A similar key for plants in the Great Plains covers a much broader area. MNPS members may purchase it for \$150. Multiple-site licenses are also available. The CDs are published by Flora ID Northwest, LLC.

Both the Minnesota and Great Plains Flora ID keys will be available at MNPS regular monthly meetings through Treasurer Ron Huber. Both CDs are also available through the mail, but add \$2 each for shipping. For mail order, contact Ron at huber033@umn.edu or huber@mnnps.org

Bruce Barnes suggests that purchasers contact him at

flora@ucinet.com about once a year for any updates, which he will send free.

Winter botany field trip is Nov. 12 at Maplewood

by Ken Arndt

Join MNPS President Jason Husveth and MNPS Board Member Ken Arndt for a winter botany field trip at the Maplewood Nature Center Saturday, Nov. 12. We will be leading a walk through the nature center grounds to learn about the many native wildflowers, grasses, sedges, trees, and shrubs and will focus on the winter aspects of vegetation, natural communities, and vegetation associations.

The field trip will start at 9 a.m. and go until noon. We will meet inside at the nature center, where we will learn about the history of the Maplewood Nature Center and briefly talk about the ins and outs of winter botany before we venture outside.

Depending on the time and amount of ground we cover at the nature center, we may drive to Jim's Prairie, which is located a short distance from Maplewood Nature Center. Many consider Jim's Prairie to be the finest wet prairie in Ramsey County. Although only five acres in size, it has more than 150 different plants throughout the preserve.

For sign-up information and directions, go to our Web site at www.mnnps.org or e-mail Jason at president@mnnps.org to sign up in advance. Space will be limited to 30 society members, so sign up today to reserve your spot.

MNPS Board of Directors

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Prairie plants on the Web

Plants in Prairie Communities is a University of Minnesota Web site. It contains information compiled by MNPS member Roy Robison, Donald B. White, and Mary H. Meyer about three typical prairie communities — wet, mesic, and dry — and the most significant plants found in each of them. Go to www.extension.umn.edu/distribution/horticulture/DG3238.html

From the president

Welcome back to all of our members to the beginning of another membership year of the Minnesota Native Plant Society. I am pleased to report that we continue to grow in membership and as an organization, thanks to an active board of directors and the contributions of our membership.

What a fantastic summer it has been to be a member of the Minnesota Native Plant Society! Our members really stepped up and offered some exceptional opportunities to visit natural communities throughout the state. On behalf of the society, we thank Hannah Texler, Paul Bockenstedt (MNPS) and the Iowa Native Plant Society, Karen Schik, Barb Delaney, and Ken Arndt for leading outings to Minnesota's Scientific and Natural Areas and destinations on the Minnesota-Iowa border. Thanks to Doug Mensing for his effective service as field trip coordinator in 2005, and to Ken Arndt and Mary Brown for serving as coordinators for 2006.

Our board and officers are working on some interesting projects to move the society forward in 2006. Planning for the spring 2006 symposium is underway. It is pointing to a location south of the Twin Cities, addressing the ecology of vegetation in the Driftless Area of southeastern Minnesota.

The board is working on designing and printing our very first Native Plant Society T-shirt in the coming months, which should serve to increase our exposure within our communities and social circles. Scott Milburn and Jason Husveth will be participating in workshops through the Science Museum of Minnesota (funded by the National Science Foundation) to document the Society's 23-year history and to preserve the many archival materials on loan from our many members. We plan to incorporate much of this archival information into the

society's new Web site (www.mnnps.org) and have this information more readily available for the society's 25th anniversary in 2007. Shirley Mah Kooyman and Linda Huhn are investigating the possibility of establishing a society scholarship to benefit Minnesota students of botany, ecology, and related areas of study.

We always welcome the ideas of our members, and we invite all of our membership to participate in the many programs, field trips, and special events we are planning for the coming year. Please feel free to send your ideas and suggestions to me at president@mnnps.org. I look forward to seeing you all at the November native seed exchange, winter field trips, and future meetings.

Jason Husveth, president, Minnesota Native Plant Society

Master Naturalists

The first Minnesota Master Naturalist Program is underway. This volunteer program is similar to the Minnesota Master Gardener Program. Three locally taught 40-hour courses are: Big Woods, Big Rivers, started this fall; Prairies and Potholes, starting in 2006; Northwoods, Great Lakes, starting in 2007. Additional information is at www.minnesotamasternaturalist.org

Grey Cloud Dunes SNA

2005 marked the first year of the society's stewardship role at Grey Cloud Dunes SNA in Cottage Grove. In cooperation with the DNR, we hosted three work events and one prairie hike. The prairie hike was the best-attended event. Four hard-core souls worked on honeysuckle removal in February, about 15 people stacked brush and cut large trees with hand saws in March, and four intrepid volunteers pulled spotted knapweed on a "slightly warm" evening in July. Many thanks to all members who helped. We hope to increase our participation in 2006.

Plant Lore

by Thor Kommedahl

What is moonseed?

Moonseed, also called Canada moonseed, is *Menispermum canadense*, a member of the moonseed family.

How did it get its name?

The bluish-black fruits (drupes) each contain a single, crescent moon-shaped, flat seed, hence the name *Menispermum*, which means "moonseed" from the Greek words.

What does the plant look like?

It is a climbing, woody vine up to 12 feet long. Leaves have three to seven shallow lobes, and the petiole is attached to the blade above the leaf base. The flowers are small and whitish. Some have mistakenly identified moonseed as wild grape because of the resemblances of leaves, fruits, and vines. Leaves are more obtuse than grape leaves. Remember, wild grape vines have tendrils.

Where does it grow?

It is native to Minnesota in rich, moist thickets and along stream banks.

Is it edible or medicinal?

The yellow root extract once served as a substitute for sarsaparilla in soft drinks. Early on, it was used as a diuretic and laxative and even listed then as an official drug in the *US Pharmacopeia*.

But is it poisonous?

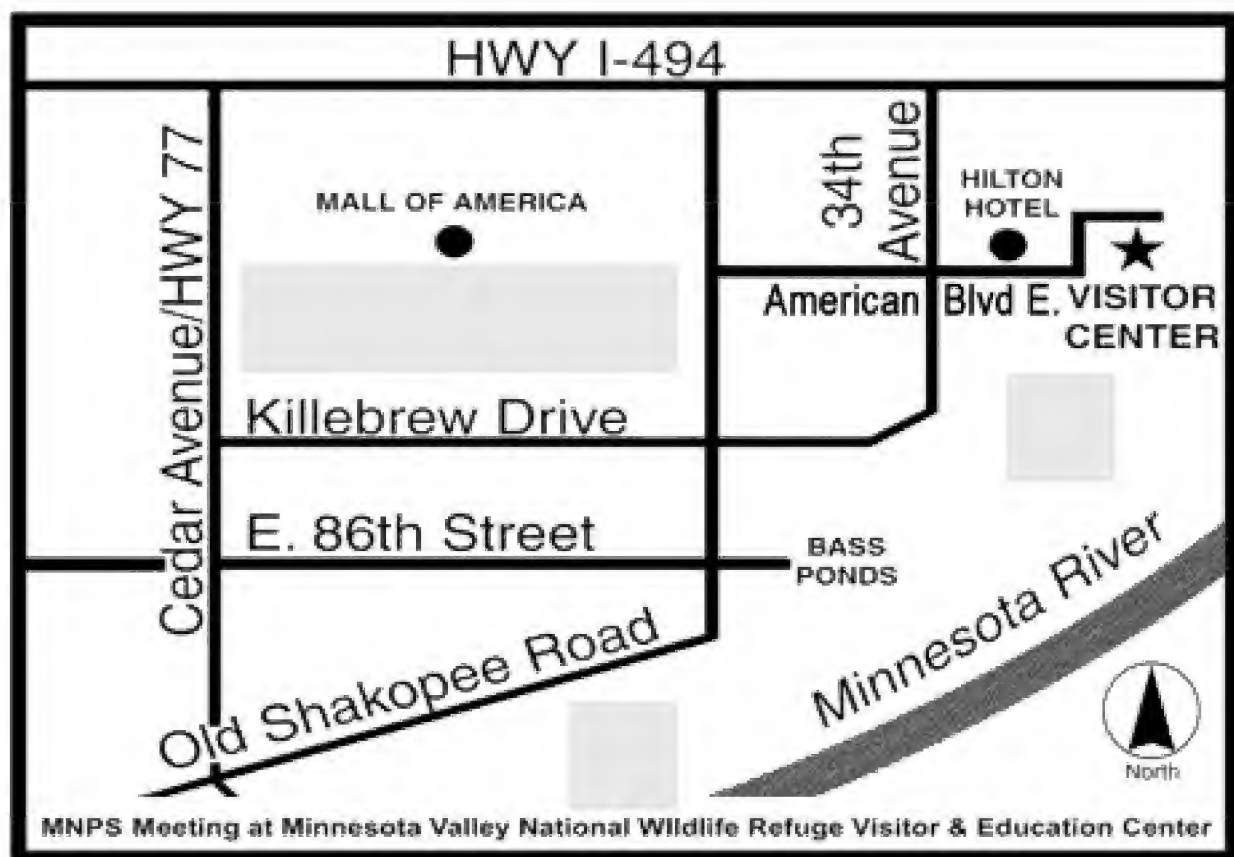
Yes. Fruits and seeds are poisonous. Cases of poisoning, with some fatalities, have been reported from children confusing moonseed with wild grapes (which are edible). The poison is an alkaloid that affects the nervous system. *Menispermum* is in the family of plants that produce tubocurarine, the chief ingredient of curare — the South American arrow poison.

Would anyone actually cultivate this plant?

Yes, it is cultivated outdoors for its foliage. It can be propagated from seeds and by cuttings.

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Feb. 2: “Jaws: Carnivorous plants native to Minnesota,” by Jason Husveth, Critical Connections Ecological Services. **Plant of the Month** to be announced.

March 2: “A Match Made in Humus?” The connection between bolete mushrooms and the roots of trees in Minnesota,” by Bryn Dentinger, graduate student, University of Minnesota. **Plant of the Month. Annual meeting,** election of three board members.

April 6: “Site and Restoration History of the Twin City Army Ammunition Plant,” by Wade Hammer, wetland ecologist with Svoboda Ecological Resources.

April 22: Symposium, St. Olaf College.

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e-mail: contact@mnnps.org

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Scientific and Natural Area Spotlight

Pine Bend Bluffs

By Karen Schik

As the Mississippi River flows toward the Gulf of Mexico, it makes a sharp bend to the east some eight miles downstream from the City of Saint Paul. This unique area, named Pine Bend Bluffs by early white settlers for the many white pines that grew in this area, remains a natural jewel nestled along the river in a rapidly developing portion of Dakota County. In the Twin Cities Metropolitan Area, a place of explosive development and urban expansion that continually eats away at the few remaining natural areas, it may seem surprising that large tracts of high quality natural areas still exist. A few such gems do remain, and there are several organizations that work together to obtain permanent protection for them.

Pine Bend Scientific and Natural Area was officially dedicated in May 2004. It was the result of many years of work and collaborative effort between Friends of the Mississippi River (FMR), the Trust for Public Land (TPL), and the Department of Natural Resources (DNR). The existing SNA was owned by several different private parties, so the fact that it all came together as one piece of land was extremely fortunate.

Tens of thousands of years ago, when the last of the glaciers were receding, the meltwater formed the Glacial River Warren, which carved the current river valley. The vestiges of this mighty river, the Mississippi, meandered uninterrupted through islands and channels on its way to the Gulf. In the 1930s, with the construction of a series of locks and dams, the nature of the river was changed — and with it the valley landscape was dramatically altered. However, the steep, wooded Pine Bend Bluffs have remained largely in their natural state.

Today these 200-foot bluffs, dissected by numerous ravines, are home to many native plant and animal communities. The steep, south-facing slopes, with their gravelly soils, are hot and dry and contain prairie remnants, dry oak forest, and oak woodland. The cooler, moister north-facing slopes contain mesic oak forest and white

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Treasurer's report for 2005

Assets	Dec. 31, 2005	Cash flow Jan. 1 - Dec. 31	
Checking	\$14,900.44	Income	
Flora ID CDs	0.00	Insurance refund	4.00
Refuge project	38.92	Book sales	146.55
Think Native	441.07	Flora ID CDs	2,292.00
Total checking	15,380.43	Donations	692.00
		Interest on checking	14.51
CD #10061266	1,063.40	Membership dues	3,470.00
CD #95851478454	1,000.00	Symposium	5,992.00
Cash on hand	55.00	Plant sale	871.50
Total assets	\$17,498.83	Other	70.00

Total income \$13,552.56

Prairie Smoke to be Conference host

Prairie Smoke will host the 2006 conference/banquet of The Prairie Enthusiasts (TPE) March 11 at Eagle Bluff Environmental Learning Center in the southeastern Minnesota bluff country near Lanesboro. Their target audience includes TPE members, landowners, and all persons interested in practical management and preservation of native prairies.

Overnight lodging will be available in Eagle Bluff dorms Friday and Saturday nights. For more information, or to be considered as a speaker or exhibitor, contact Andrea Mueller at andreaHillTopArts@msn.com

Expenses

Renew CD	\$1,000.00
Insurance	436.00
Printing	1,123.64
Postage	920.10
Sales tax	144.00
Supplies	64.33
Symposium	2,512.97
Think Native	200.00
Refuge project	565.52
Flora ID CDs	1,725.00
Boundary Waters Fndtn.	50.00
Web site	512.65
Honoraria	50.00

Total expenses \$9,304.21

Net income \$4,248.35

MN NPS Board of Directors

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Technical or membership inquiries: contact@mnnps.org

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Society has new mailing address

The MN NPS has changed its mailing address to a post office box. It will be checked at least once a week, speeding processing of membership applications and answers to your questions. The address is:

Minnesota Native Plant Society
P.O. Box 20401
Bloomington, MN 55420

Minnesota Native Plant Society's purpose

(Abbreviated from the bylaws)

This organization is exclusively organized and operated for educational and scientific purposes, including the following:

1. Conservation of all native plants.
2. Continuing education of all members in the plant sciences.
3. Education of the public regarding environmental protection of plant life.
4. Encouragement of research and publications on plants native to Minnesota.
5. Study of legislation on Minnesota flora, vegetation and ecosystems.
6. Preservation of special plants, plant communities and scientific and natural areas.
7. Cooperation in programs concerned with the ecology of natural resources and scenic features.
8. Fellowship with all persons interested in native plants through meetings, lectures, workshops and field trips.

Pine Bend SNA

Continued from page 1

pine-hardwood forest. Along the river, are black ash seepage swamp and floodplain forest. These natural communities contain populations of seven rare plant species, of which four are listed as state-endangered.

Pine Bend was an important location for Native Americans and was one of the earliest sites of European settlement in the region. Vestiges of the town of Pine Bend are still visible south of the SNA, near the Flint Hills Resources refinery. Individual parcels at the SNA have more recent human histories. At the property owned by the Burgers, for instance, you can still see remnants of a Boy Scout cabin, built there by hand in the 1930s from logs that were floated to the site in a raft. Not far from there is the Old Military Road, which ran parallel to the river. And from the McGill property, you can find arguably the most spectacular views of the Mississippi River in the metropolitan area. (View photos at: www.fmr.org/sna_addition.html)

One of the former property owners, the late Dwight Malcolm, not only donated his parcel to the state for permanent protection, but also provided significant funding to FMR for habitat restoration work at that parcel. In partnership with the DNR and the National Park Foundation, which also donated funds to the site, FMR has undertaken extensive exotic woody plant removal from the oak forest and has initiated a seven-acre oak savanna restoration. Over the last two years, nearly 200 volunteers have helped haul and stack large amounts of brush, collect prairie seed, and prepare the woodland for a prescribed burn.

Events planned for 2006 include brush burning on Saturday, Jan. 28, garlic mustard pulling on June 3, and seed collection in the summer and fall. For more information or to sign

up, contact Katie Galloway at Friends of the Mississippi River (651-222-2193 ext. 14, or kgallowa@fmr.org).

For additional information, visit:
www.fmr.org/pbptnrs/
www.fmr.org/pr03112003.html
www.dnr.state.mn.us/snas/sna02030/index.html

Group explores winter botany at Nature Center

by Ken Arndt

On Saturday Nov. 12, MN NPS President and Botanist Jason Husveth and Board Member and Urban Forester Ken Arndt led 16 amateur and professional plant enthusiasts on an enjoyable walk through the Maplewood Nature Center property to learn about winter botany. With a lack of snow cover and comfortable temperatures that morning, we encountered many different plants along the trails.

We began inside the nature center, where we had a brief overview of the aspects of winter botany and how to begin identifying plants by characteristics outside of the growing season. We started our plant walk at a small landscaped area dominated by native trees, shrubs and perennials. A paved trail took us around a large open-water pond, where we passed through a wooded area of green ash, silver maple, and black willow. We moved on, to a small prairie restoration area and into an upland of white and northern pin oak. Here, a buckthorn removal project has opened up the understory, welcoming back the true natives. On the north side of the pond, a large stand of pagoda dogwood was growing along the trail, just above the wetland edge with hackberry and silver maple.

Maplewood Nature Center is also a great get-away for a quick family hike through scenic woodland and wetland plant communities.

Symposium on Driftless Area is April 22

“The Land that Glaciers Forgot: the Ecology of the Driftless Area” is the subject of this year’s symposium. It will be Saturday, April 22, from 8:30 a.m. to 4 p.m. at St. Olaf College Science Center, Northfield.

Presenters will discuss the geology of the Driftless Area and its plant communities, rare plants, and conservation issues. Speakers and their topics are posted on the MN NPS Web site, www.mnnps.org. Members will also receive a brochure in the mail. Space will be limited, so register early.

Two Winter Field Trips are planned

Join MN NPS members Saturday, Feb. 11, from 9:30 a.m. to noon for a tour of the University of Minnesota’s herbarium. Dr. George Weiblin, curator of flowering plants-Bell Museum, will take us through the herbarium and give us an up-close look at what it takes to maintain a herbarium at a major university. A demonstration on plant specimen mounting will be included.

On Saturday, March 11, from 9 a.m. to noon, MN NPS Board Members Ken Arndt and Scott Milburn will lead a field trip at Boot Lake Scientific and Natural Area in northern Anoka County. From the tamarack swamp through the stately white pines and into the woodlands and on to Boot Lake, we will identify woody and herbaceous plants found at this great SNA.

Go to www.mnnps.org for information on signing up for either of these field trips, detailed directions and parking lots. Participation will be limited to 25 people for each trip. Field trips for this spring will be posted soon.

A gorgeous view: Plant communities of the Mississippi Gorge Regional Park

by Karen Schik, *Friends of the Mississippi River*; and Carolyn Carr, *Ecological Strategies*. This is an abstract of their presentation at the Nov. 3, 2005, meeting.

The Mississippi River Gorge is an eight-mile stretch of river between St. Anthony Falls and the confluence with the Minnesota River. This steep-sided ravine is the only gorge on the entire length of the river and is a result of the only falls on the river. The story of how the falls and the gorge came to be began millions of years ago, when ancient seas covered the region. Deposits of sand and calcite exoskeletons of tiny organisms formed thick layers of sandstone beneath limestone. Long after the seas receded, the landscape was dramatically altered by glaciation. The most recent glacial period, about 10,000 years ago, carved many of the present-day stream and river valleys and exposed the bedrock layers along parts of the gorge. The geologic history can easily be viewed at the exposed cliff faces in many places along the river.

The gorge came about as a result of erosion and recession of St. Anthony Falls. About 8,000 years ago, the falls was located in downtown St. Paul. Water flowed over the limestone shelf of the falls and eroded the soft sandstone beneath it. The undercut limestone would eventually break off, causing the migration of the falls upstream and leaving behind the present-day gorge with 100-foot bluffs. Geology forms the basis for plant communities and strongly influences the other factors that shape the communities: soils, topography, aspect, climate, hydrology and disturbance regime.

While the native Minnesota plant communities have been largely altered since the time of European settlement, first by logging and more recently by invasive species, the entire corridor has been identified by the DNR as having moderate or high biodiversity significance. Mesic oak forest is the dominant community along the river, but a number of other plant communities can be found, including floodplain forest, maple basswood forest, black ash seepage swamp, and mesic prairie.

Mesic Oak Forest class consists of mesic forests on gravelly moraine or outwash deposits, and on slopes with thin soil over bedrock along the Mississippi River bluffs. They developed on moist to somewhat drought or fire-prone sites. Red oak, white oak, bur oak, and pin oak dominate mesic oak forests. These stands typically did not burn as much as drier oak forests and were probably always forest, rather than savanna. The trees are tall and straight, with narrow crowns. Fire-sensitive species are common, especially basswood, green ash, butternut and aspen, as well as hackberry, bitternut, walnut, elm and sugar maple. This community often succeeds to maple-basswood forest.

The shrub layer is sparser than in dry forests because the canopy is denser. The forb layer is subsequently more dense and diverse and has more grasses and sedges, as well as tree seedlings. An abundance of prickly ash and other spiny shrubs are indicators of past grazing.

Floodplain Forests are made up of a particularly hardy group of species, adapted to disturbances of opposite extremes, such as prolonged

flooding and drought, and severe erosion and sedimentation. One adaptation to injury that many floodplain tree species have is to send up new shoots, forming multiple trunks, a common floodplain forest feature.

Structurally, floodplain forests are not very diverse, with sparse or absent shrub layer. The ground layer is also sparse and may be absent in an active floodplain until mid-summer. Then it is composed of early-successional, opportunistic species, especially annuals. Stinging nettle is common, as well as clearweed, goldenglow, touch-me-not, honewort and bur marigold. A distinctive feature of floodplain is that there are many vine species.

Black Ash Seepage Swamp is a rather uncommon plant community that is most often found on level river terraces at the base of steep slopes. In the gorge, it exists below Minnehaha Falls. The community consists of wet hardwood forests on muck or peat soils in areas with continuously flowing cold groundwater. The canopy is patchy to interrupted and is dominated by black ash, sometimes with basswood and American elm, and rarely with green ash and yellow birch. Skunk cabbage is a common ground layer species, and the shrub layer is typically sparse or absent.

Maple Basswood Forest is found in moist, fire-protected areas such as ravines and north-facing slopes. In the gorge it can be found on the west side of the river, near 44th St.

Only about 2 percent of maple basswood forest is left in the state. Although the loss has been primarily due to farming, logging and

development, remaining areas are now threatened by invasive species.

The community is characterized by a dense, continuous canopy dominated by sugar maple and American basswood, though red and white oak, green ash, slippery elm, and paper birch are also common. The trees are tall, straight, and narrow-crowned. Because the canopy is so dense, the shrub layer is sparse, and the ground layer is diverse and abundant. Woodland wildflowers must take advantage of the bright light in spring before leaf-out to flower and set seed, so spring ephemerals are common.

Maple-basswood is a late-successional community that succeeds mixed oak forest and other forest types on mesic soils. It is a self-perpetuating community because seedlings of the dominant tree species are very shade-tolerant. The forest can develop into old-growth forest because catastrophic disturbance is rare and dominant species are long-lived (250 years or more).

Sugar maple plays a key role in soil formation. It is sometimes referred to as a nutrient pump, because it pulls nutrients from deep in the soil to make massive numbers of leaves. In most tree species, nutrients from the leaves are returned to the tree trunk in the fall, prior to leaf fall. In sugar maple, the nutrients are not returned to the trunk but fall with the leaves, thus returning high levels of calcium, phosphorus and magnesium to the soil and creating a very rich duff layer.

One of the most serious threats to this and other hardwood forest communities in Minnesota is the invasion of earthworms. Since earthworms did not survive glaciation, plant communities that evolved after glaciation did so in the absence of earthworms. Earthworms

were brought here by European settlers and have since spread from gardening and fishing.

Referred to as “ecosystem engineers,” earthworms seriously alter the soil structure in native forests. By consuming the duff or leaf litter, they convert the loose, rich, and spongy native soils to a hard, mineral soil with no duff, thereby removing the substrate from beneath the native woodland plants. Earthworm infestations result in bare forest floors with a very depauperate species assemblage.

It is not yet clear if forest communities can recover from the altered condition. The problem is compounded because exotic plant species such as garlic mustard and buckthorn readily invade the disturbed soils. And native woodland plants that do survive are preferentially eaten by an overly abundant deer population.

Mesic Prairie comprises a very small portion of the gorge, but an intensive restoration project at the “prairie bowl” at 36th St. and West River Road has been on-going for many years. Successive burning, woody removal, seeding and planting efforts are helping to restore the native composition and structure to this small remnant.

While degraded in many areas by historic land uses and exotic invasive species, the river gorge has been the target of intensive restoration activities for many years and an amazing collaboration of local residents working with many other groups. The Minneapolis Park Board, Friends of the Mississippi River, Great River Greening, the Department of Natural Resources and the National Park Service are some of the entities that have been working with neighborhood groups to restore and maintain the natural features of this local treasure.

Patterned peatland field trip planned for July weekend

Jason Husveth will lead a northern Minnesota field trip Saturday, July 15, and Sunday, July 16, to a patterned peatland he surveyed last summer. The trip will be open to all MN NPS members.

The location is 12 miles southeast of Ely along Minnesota Hwy. 1, in the Superior National Forest and on state forest land. Participants will camp in a national forest campground Friday night.

This site is within a large complex of patterned peatland, rich fens, poor fens, black spruce swamps, and tamarack swamps. In addition to rare species, participants will see carnivorous plants, numerous orchids, sedges, rushes, grasses, and native wetland wildflowers. The trip will require hiking across the peatlands along a “winter access road.”

The hike will be approximately one to two miles each way on a saturated cushion of peat moss over a consolidated peat deposit and will be somewhat difficult to difficult. “The payoffs will make all of the efforts worthwhile,” Jason said. “I hiked into this complex three times last summer, and it was one of the most fascinating sites I have ever surveyed in Minnesota.”

Jason will announce the trip at the February meeting and will post details, including costs, on the society’s Web site.

Minnesota grass key is on herbarium Web site

Anita Cholewa has placed an easy-to-use grass key online at www.umn.edu/herbarium/LGrasses/grass%20text/contents%20Lpage.htm. She is curator of temperate plants, J. F. Bell Museum of Natural History, University of Minnesota, St. Paul.

Nursery Law amendments affect rules for plant sales

by Dianne Plunkett Latham

This is part of an article Dianne, a former MN NPS board member, wrote for the Federated Garden Clubs of Minnesota Newsletter.

On June 30, the Minnesota Legislature passed a bill to keep portions of our state government running. The bill not only managed to keep the Departments of Natural Resources and Agriculture operational, but it also had quite a few other things in it, including changes to 18H.06, Exempt Nursery Sales. The new Nursery Law amendments went into force on July 1, 2005.

The new amendments removed the words “Nursery Hobbyist” and “organization,” leaving only the word “individuals.” Thus, any individual, as a private citizen, and/or as a member of a garden club, can sell up to \$2,000 of Minnesota-grown nursery stock to customers who will plant it in Minnesota, but the number of days of allowable sales was reduced from 14 days to 10 days.

Under 18H.02, Subd. 20, nursery stock is defined as “trees, shrubs, vines, perennials, biennials, grafts, cuttings and buds that may be sold for propagation, whether cultivated or wild, and all viable parts of these plants.” As before, members who have the above-defined plants, which are grown out-of-state, cannot sell them at a Minnesota club’s plant sale under the occasional sales statute.

As before, the nursery certification requirements do not apply to annuals, bulbs, tubers, vegetable plants or ornamental indoor plants, among others. These categories of plants may be grown by members in Minnesota or out-of-state and sold at a Minnesota club plant sale without need of any certification.

Broadly speaking, there are two groups eligible to sell nursery stock without obtaining a nursery stock grower certificate (exempt nursery sales). These two groups are not-for-profit sales and occasional sales. Not-for-profit sales applies to an organization or an individual who offers for sale *certified* nursery stock (from any certified nursery, from any state) if sales are conducted on 10 or less days in a calendar year, and if the proceeds are used for educational, scientific, charitable or religious purposes. There is no dollar limit on the amount of nursery stock that can be sold under the not-for-profit statute. However, *all* the stock must be certified in the state of origin prior to sale.

The second category under exempt nursery sales is occasional sales. The rationale for the occasional sales statute on low volume sales (\$2,000 per year limit) of Minnesota-grown nursery stock to customers who will plant the nursery stock in Minnesota, is that such nursery stock presents a low risk of plant pest spread from seller to customer. The occasional sales category is the part of the statute that is generally the most applicable to garden club plant sales.

The old statute allowed an individual, company or organization such as a garden club to sell up to \$2,000 per year of uncertified nursery stock, for example, stock grown in members’ back yards, in addition to certified stock purchased from Minnesota vendors. All stock had to be Minnesota-grown and planted in Minnesota. Sales could be conducted up to a maximum of 14 days per calendar year.

What does a garden club have to do to prove that no member is selling over \$2,000 worth of plants under the new statute? To determine this, on Sept. 22, I met with representatives of the Minnesota Department of

Agriculture (MDA), including Geir Friisoe, manager of the Plant Protection Section, Mark Schreiber, supervisor of the Nursery Inspection & Export Certification Unit, and Gail Ryan, MDA attorney. Also participating were Mary Maguire Lerman, City of Minneapolis horticulturalist, and Myk Hamlin of the Minnesota Hosta Society. The consensus was that if a garden club hosted or advertised a plant sale with plants provided by its members, and the total sales of nursery stock (defined under 18H.02 subd. 20) were under \$2,000, the club need not track sales to individuals. If total sales of nursery stock were over \$2,000, however, the garden club must record each individual member’s sales so that the garden club can demonstrate that no member sold more than \$2,000 worth of nursery stock at their sale.

Representatives of the Minnesota Department of Agriculture said that the occasional sales classification is an option available to low-volume, infrequent plant vendors. The choice is up to each individual; plan sales dates carefully and stop selling when \$2,000 is reached, or get a nursery stock grower’s certificate. Once the plants are certified, you can sell your plants on as many days as you wish and without a limit on the amount of money you make. Each individual is responsible for keeping personal records of their nursery stock sales to document that their total sales of nursery stock do not exceed \$2,000 in a given year, and that sales do not occur on more than 10 days during the year.

Technical changes were also made to Minn. Statutes 18H.18, Conservation of Certain Wildflowers. The changes were made to eliminate redundant plant names, establish consistency within the statute and clarify plant species covered by the statute. No species were removed or added as a result of this most recent revision. Questions

about the wildflower statute or nursery laws can be directed to Mark Schreiber or Steven Shimek at the MDA at 651-296-8507.

I have been appointed by Geir Friisoe to represent garden clubs at future deliberations on proposed amendments to the nursery laws. If you have any comments on the nursery laws do not hesitate to contact me at 952-941-3542.

Book review

Field guide for Laurentian Mixed Forest Province

by Scott Milburn

Recently, the Minnesota Department of Natural Resources revised its system of classifying native plant communities in Minnesota. The native plant communities defined in this effort are based not on plant species composition alone, but also considerations of hydrology, landforms, soils, and natural disturbance.

This information is being published in a series of three field guides. The first, *Field Guide to the Native Plant Communities of Minnesota: the Laurentian Mixed Forest Province*, was published in 2003. The second field guide, for the Eastern Broadleaf Forest Province, has just been printed. The third guide, for Prairie Parkland-Aspen Parklands is to be available soon.

The guides are small in size, to enable the user to easily carry them on a short hike or a long camping trip. These guides are also field-hardy, printed on water-resistant paper, enabling the user to have one less worry when perhaps crossing an extensive peatland or waiting out a summer storm. Price-wise, the

guides are very affordable and can be purchased at Minnesota's Bookstore.

The Laurentian Mixed Forest Province guide provides easy-to-use keys for identifying native plant communities, along with well-written information on the various ecological systems described for the Laurentian Mixed Forest Province.

It includes detailed fact sheets for each described native plant community. I have found the fact sheets to be very valuable, with an abundance of very interesting information that users will appreciate. These fact sheets are also available online on the MN DNR Web site.

The guide itself provides an enormous amount of information, some of which is technical. That should not, however, intimidate anyone interested in learning more about the plant communities of Minnesota. The guides are not just for professionals, but are for anyone who is interested in understanding how our landscape is shaped by ecological processes. For a link to the MN DNR Native Plant Community page, visit our Web site (www.mnnp.org) and look under links.

Information about the second book, *Field Guide to the Native Plant Communities of Minnesota: the Eastern Broadleaf Forest Province*, will be available on the Minnesota's Bookstore's Web site, www.minnesotasbookstore.com. The price is \$10.95, plus sales tax and \$3 for shipping.

Mail orders can be sent to Minnesota's Bookstore, 660 Olive St., St. Paul, MN 55155. The retail store is open from 8 a.m. to 5 p.m. Monday through Friday. Call 651-282-5077 or 1-800-657-3706.

Plant Lore

by Thor Kommedahl

What is Dutchman's breeches?

Dutchman's breeches is *Dicentra cucullaria* in the fumitory (bleeding heart) family.

What do its names mean?

Dicentra comes from *dis* meaning twice and *kentron* meaning spur, referring to the double-spurred flowers. The specific epithet *cucullaria* means hooded. And, of course, the flowers resemble pantaloons or breeches.

What does the plant look like?

It is a perennial with roots consisting of a cluster of many small white tubers. White flowers hang from an arched stem (raceme), and each bloom has two inflated spurs resembling legs of tiny pantaloons. Leaves are highly dissected, almost fern-like. It flowers in April and May, then goes dormant.

Where does it grow?

It is found as a native plant in rich woods, in full or semi-shade, in most of the state except the northwest. The seed is difficult to harvest; as soon as it ripens, it falls quickly from plants.

Is it poisonous or medicinal?

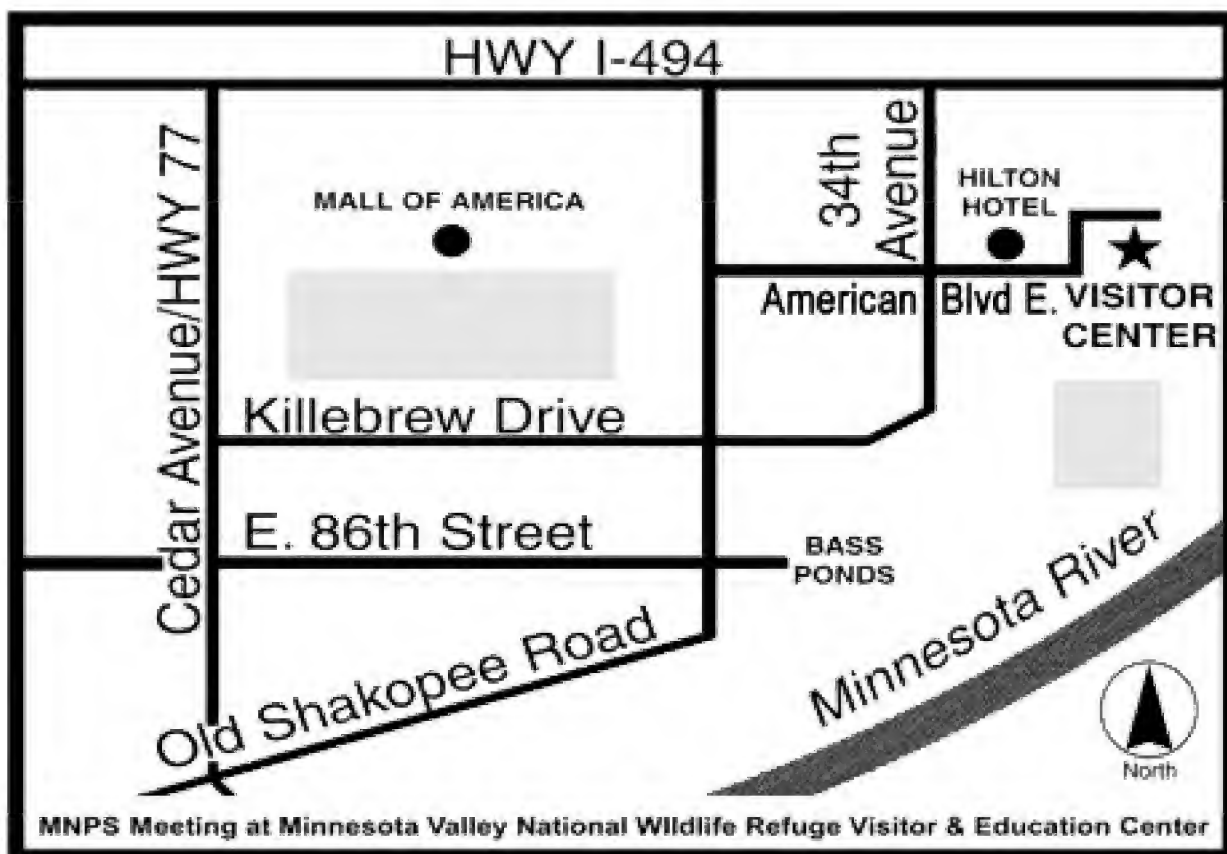
It may cause a skin rash. It contains the alkaloid protopine, which acts as a depressant to the central nervous system. Cattle grazing on this plant tremble and stagger, and sometimes the plant is called staggerweed. Root tea has been used as a diuretic and to promote sweating.

Has it other uses?

Not economically. The Menominee Indians regarded it as a love charm. A suitor would throw the plant at a potential mate, who then felt compelled to follow the suitor. If a root was nibbled by a man, it was believed that his breath would attract a woman, even against her will. A different species, *Dicentra spectabilis*, is bleeding heart, and it is cultivated in gardens.

Minnesota Native Plant Society
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Minnesota Plant Press

The Minnesota Native Plant Society Newsletter

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Monthly meetings

Minnesota Valley National Wildlife Refuge
Visitor Center, 3815 American Blvd. East
Bloomington, MN 55425-1600
952-854-5900

- 6:00 p.m. — Building east door opens
- 6:00 p.m. — Refreshments,
information, Room A
- 7 – 9 p.m. — Program, society business
- 9:00 p.m. — Building closes

Programs

The MN NPS meets the first Thursday in October, November, December, February, March, April, May, and June. Check the website for more program information.

May 4: “Sioux Nation Calcareous Fen,” by Jeanette Leete, hydrogeology technical analysis supervisor, DNR. **Plant of the Month:** *Carex sterilis* (a sedge) by Scott Milburn, Society vice president.

June 1 “Invasive Cattail Control,” by Cindy Kottschade, University of Minnesota graduate student. **Native Plant Sale** immediately following the program.

Symposium is April 22

At press time, there were still a few openings at this year’s MN NPS symposium — **The Land That Glaciers Forgot: The Ecology of the Driftless Area.** It will be from 9 a.m. to 4 p.m. Saturday, April 22, at the St. Olaf College Science Center, Room 280, in Northfield. Details are on the website, www.mnnps.org

MN NPS website

www.mnnps.org
e-mail: contact@mnnps.org

MN NPS Listserve

Send a message that includes the word “subscribe” or “unsubscribe” and your name in the body of the message to: mn-natpl-request@stolaf.edu

Finding the invisible orchid

by Erika Rowe, Plant Ecologist/Botanist, Minnesota County Biological Survey, Division of Ecological Services, Minnesota Department of Natural Resources

There are a handful of native plant species in Minnesota that have mythic qualities: elusive, rare, revered, endangered, or so specific in their habitat requirements they are not likely to be seen. Bog adder’s-mouth (*Malaxis paludosa*) encompasses all of these qualities and therefore has earned the reputation of being one of the rarest orchids in North America. Bog adder’s-mouth is one of the most challenging orchid species to find, partly because of its rarity, but also because it is easily overlooked. The orchid’s small stature and greenish color make it difficult to distinguish from the mossy hummocks where it typically grows. Prior to 2005, only six known records existed from four counties in Minnesota, the only state within the contiguous United States to have any documented locations. The first finding was in Otter Tail County in 1904; however, that population has not been relocated. Other populations were subsequently found in Hubbard, Clearwater, and Beltrami counties. It has also been found in scattered locations in Canada and Alaska. It is less rare in northern Europe.

In 2005, *Malaxis paludosa* was on my rare plant list as a species to look out for while surveying Becker County for the DNR’s Minnesota County Biological Survey. The idea of finding it, however, seemed so remote I was reluctant to search for it. So when my colleague, Tim Whitfeld, who was surveying nearby Clearwater County, told me that he was going to spend a few days looking for *Malaxis paludosa*, my initial reaction was one of amazement for attempting such an ambitious goal. In fact, several other experienced botanists uttered words such as “wild goose chase” and a sarcastic “good luck!” However, this wasn’t going to dissuade him from organizing a trip with another DNR botanist, Welby Smith, to a documented location of *Malaxis paludosa* during peak flowering in early August. Often, seeing a flowering specimen in its habitat is the best way to begin searching for rare

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Society's first T-shirt features design by Vera Ming Wong

by Jason Husveth

The Minnesota Native Plant Society is pleased to announce the upcoming arrival of its own limited edition T-shirt.

Since October 2005, the Society has been collaborating with Vera Ming Wong, renowned local botanical artist (and plant society honorary member), to design the Society's first T-shirt. Vera produced a stunning woodcut print design, which will be printed with forest green ink on natural organic shirts.

The design showcases Minnesota's state flower — the Showy Lady's Slipper Orchid (*Cypripedium reginae*), along with the Society's name and website address.

The shirts are now in print and will be available for sale at the April 22 symposium and at our monthly meetings and field trips. Sizes Small to XXXL will be available. Be sure to purchase these uniquely beautiful shirts before they sell out!



Invasive species events

If you are sponsoring an invasive species event this year, send the information to Dianne Plunkett Latham at PlunkettDi@mn.rr.com and she will coordinate posting on the MN NPS website with our webmaster. If you would like to volunteer in one of the many noxious weed control programs throughout the state, go to www.mnnp.org/invasive/index.htm for a listing of events, and select one that has a convenient time and location for you.

Minnesota Native Plant Society's purpose

(Abbreviated from the bylaws)

This organization is exclusively organized and operated for educational and scientific purposes, including the following:

1. Conservation of all native plants.
2. Continuing education of all members in the plant sciences.
3. Education of the public regarding environmental protection of plant life.
4. Encouragement of research and publications on plants native to Minnesota.
5. Study of legislation on Minnesota flora, vegetation and ecosystems.
6. Preservation of special plants, plant communities and scientific and natural areas.
7. Cooperation in programs concerned with the ecology of natural resources and scenic features.
8. Fellowship with all persons interested in native plants through meetings, lectures, workshops and field trips.

MN NPS Board of Directors

President: Jason Husveth, 14758 Ostlund Tr. N, Marine on St. Croix, MN 55047; 651-247-0474; president@mnnp.org

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Historian/Archives: president@mnnp.org

Technical or membership inquiries: contact@mnnp.org

Minnesota Plant Press editor: Gerry Drewry, phone, 651-463-8006; plantpress@mnnp.org

Mary Brown resigns from board; three members re-elected

Mary Brown has resigned from the Minnesota Native Plant Society Board of Directors. She cited time constraints, but said she will continue to remain active in the Society.

The three board members whose terms expire in June have been re-elected. They are Scott Milburn, Shirley Mah Kooyman, and Daniel Jones.

Memorial honors Dr. Valentine O'Malley

by Linda Huhn

Long-time Minnesota Native Plant Society member Dr. Valentine (Val) O'Malley, who passed away June 2, 2005, at the age of 86, made many contributions to the Society as well as to his community and country.

In memory of his friend, Arden Anestad has made a significant monetary gift to the Society. "We will miss him at meetings," he remarked to me. And that's an understatement.

In addition to his membership dating back to 1992, Val served on the Society's Board of Directors from 1994-97 and was chair of the Conservation Committee for several years. More recently, I remember him as a most enthusiastic front-row sitter — along with his good friend and former board member Arden — at our monthly programs. "Linda, this was really a good program, thank you so much," and "This is really great!" were phrases he often used. Even though his hearing was impaired and his health obviously failing last spring, his enthusiasm for learning and for our Society never waned.

According to Arden, "He was very interested in the natural world," and was also a member of Audubon Society, Como Zoo, Friends of the St. Paul Public Library, the Geological Society of Minnesota, and the Horticultural Society. "We always did a lot of birding together, and he helped me in banding birds and on field trips with my classes," Arden added.

In his professional life, according to Arden and the June 3, 2005, *St. Paul Pioneer Press* obituary, Val practiced internal medicine and cardiology in St. Paul for 30 years, was chief of staff at St. Joseph's

Sign up now for field trips in May, June, July

by Ken Arndt

Spring wildflowers will soon be blooming, so now is the time to sign up for the next MN NPS field trips. Sign-up sheets will be at the monthly meetings, along with detailed information about each field trip. Or, you can sign up anytime by going to our website and following the link to "Field Trips." New information is being posted regularly on upcoming trips for the spring and summer.

Wolsfeld Woods SNA

Sunday, May 7, from 1 to 3 p.m., join Shirley Mah Kooyman, MN NPS board member and adult education manager at the Minnesota Landscape Arboretum, for an afternoon of woodland wildflower identification at Wolsfeld Woods Scientific Natural Area in Long Lake. This fine example of "Big Woods" is home to many spring ephemerals like bloodroot, hepatica, rue anemone and bellwort.

Pioneer Park

Saturday, June 10, from 8 a.m. to 2 p.m., the Society will be leading a working field trip at Pioneer Park in Blaine. Come work with Botanist Jason Husveth, our president, in the continued effort to restore the fen. Participants will assist with invasive plant removal and seed collection. After lunch, there will be an interpretive walk led by Jason, which will give everyone the chance to see the progress of the fen restoration. Many rare plants will be encountered on this field trip, so sign up now and help make a difference on the ground! Group leaders will be on-site throughout the day. Come work for as many hours as you can spare, and enjoy a day helping to restore the habitat of several threatened and endangered plant species of the Anoka Sand Plain.

Patterned peatlands of northern Minnesota (Date changed.)

Set aside the weekend of July 21 to 23 for a field trip to the northern reaches of Minnesota near Ely, within the Superior National Forest. Jason Husveth will lead this two-day field trip. On Saturday the 22nd, the participants will be led on an all-day hike across a saturated cushion of peat moss, through patterned peatlands, rich and poor fens, black spruce and tamarack swamps, to see and experience the northern plant communities of this region. Many different native plants will be encountered along the

Hospital from 1967-69, and was Minnesota Deputy Commissioner of Health from 1983-87. At the time of his death, he was a medical consultant for the Minnesota Department of Health. During the Korean Conflict, he was a captain in the Army and in 1983 retired from the National Guard as a brigadier general. Val's wife Lorraine preceded him in death. In his immediate family, he is survived by three children and four grandchildren.

way, including orchids, carnivorous plants, sedges, rushes, and grasses. The second day will entail a less rigorous but equally spectacular hike at another local setting (or serve as a back-up in case of inclement weather on Saturday). Camping and lodging are plentiful in this area, but remember to make reservations in advance, since the summer can be busy. Check our website in the coming weeks for detailed information regarding this field trip. A \$10/person or \$20/family fee is required to register for this event.

Finding the orchid

Continued from page 1

plants. Pictures and herbarium specimens can only go so far in conveying how tiny and difficult this orchid is to see.

I decided to take part in the foray to relocate the existing population of orchids, although I remained skeptical that we would find them. Many people have tried returning to known populations of *Malaxis paludosa* and have been unsuccessful in relocating them, perhaps because the orchids were not in bloom at the time, but more likely because the plants have an uncanny ability to disappear into the vegetation even when one is standing in a patch of them.

Our destination was a rich black spruce swamp in Clearwater County. We set out in a line and walked slowly, scouring the ground with our eyes. Close to an hour went by and still no orchids. Something then caught my eye, despite thinking that it was probably just another fruiting stem of naked mitrewort (*Mitella nuda*), which is common in that habitat. As I got closer, I immediately knew that it was *Malaxis paludosa*, despite having never seen it in the field. I was then determined to find a new population in Becker County.

The next day, I set out hiking for a small black spruce swamp mixed with tamarack in Becker County that seemed to have all the right characteristics for potential habitat. The confidence that I had felt the day before had worn off by the time I had arrived at my destination and I had begun to feel that this long, arduous hike would be for naught. Shortly into my search I spotted green adder's-mouth (*Malaxis unifolia*), which is often known to coexist with *Malaxis paludosa*. I stooped down to confirm this, and to my disbelieving eyes there were also four *Malaxis paludosa* in full bloom! I was in such shock that I just stood there frozen, saying to myself "this can't be —



Photo by Erika Rowe, Copyright 2005, State of Minnesota, Department of Natural Resources, Reprinted with Permission.

what are the chances!" I came to my senses and proceeded to count another 10 plants within roughly two acres. When I got back to the field house that evening, my colleague Mike Lee (also working in Becker County), who was also inspired by Tim's enthusiasm for finding *Malaxis paludosa*, told me of his own discovery of yet another population. By the end of summer, five new locations were found in Becker County, bringing the total up to 11 locations in Minnesota.

All known occurrences of *Malaxis paludosa* are in conifer swamps dominated by black spruce with occasional white cedar or tamarack. The plants are usually growing in semi-shaded sites perched on hummocks of *Sphagnum*, feather mosses, or rarely *Mnium* moss, appearing as if not rooted at all. The basal parts consist of a pseudobulb, which is a swelling of the stem, covered by the bases of two to five alternate leaves. Stems arise from the pseudobulb and are typically three to six inches long (including inflorescence). Flowering begins around mid-July and lasts through the end of August, producing 10 to

29 very small, greenish yellow flowers that have a faint blue-green striped lip. These flowers twist themselves 360 degrees so that the lip is uppermost of the perianth parts. Most orchids twist 180 degrees in order to have the lip lowermost in the flower. Another interesting adaptation of this orchid is its ability to develop tiny vegetative propagules called foliar embryos at the margins of its leaves that are capable of growing into new adult plants once the leaves drop. How often or effective this process is in producing a new plant is not known. The only insect observed carrying pollen from this plant is a species of fungus gnat, *Phronia digitata*.

When I returned to the office, I notified Welby about the new populations that Mike and I had found. In near disbelief, he somewhat jokingly said, "Wow, finding *Malaxis paludosa* will be the top find of your career!" Well, I guess it's all down hill from here.

Sonja Larsen nature prints are on exhibit

by Sue Filbin, member of the Minnesota Native Plant Society and the Nature Printing Society

Nature printer Sonja Larsen is presenting an exhibit of spring ephemerals and buds native to Minnesota at the Eloise Butler Wildflower Garden during April. The show is in the Martha Crone Visitors' Shelter. The garden opens at 10 a.m. Monday through Saturday and at noon on Sunday and closes one hour before sunset. Admission is free.

Sonja Larsen lives near Nisswa. For many years, she led workshops at the annual meeting of the Nature Printing Society, and, for the 15th year, will guide her own workshop in June at Driftwood Resort. She makes her prints directly from the plants, to enable viewers to identify and appreciate the beauty inherent in the plant life we often take for granted.

A match made in humus? The association between bolete mushrooms and trees

by Bryn T. M. Dentinger, University of Minnesota graduate student. This is an abstract of his talk at the March 2, 2006, meeting.

Fungi are one of the most diverse lineages of eukaryotic organisms on the planet. With over 1.5 million estimated species, only a fraction are yet known to science. These organisms, whose ecological roles are mimicked by distantly related cousins, the water molds and slime molds, are instrumental in all living environments as decayers, pathogens, and mutualistic symbionts.

One way in which the true fungi (not including water molds and slime molds) are essential is through an intimate association with plants' roots, known as mycorrhizae. In these mutually beneficial associations (mutualisms), the plant provides the fungus with sugars it creates through photosynthesis in return for water, minerals, and protection from pathogens. The interdependence on this mutualism is so strong that both the fungus and plant are unable to persist in natural environments without each other.

This association is also very old — about 460 million years. It is now widely believed that a mycorrhizal association facilitated the initial colonization of land by the earliest aquatic non-vascular plants. Since this arrival on land, the mycorrhizal association has dominated the life of plants, and at present, more than 90 percent of all plants are involved in a mutual symbiosis with fungi.

There are several types of mycorrhizal associations that are characterized by the morphology and anatomy of the contact between the fungus and plant roots, as well as the plant and fungus species involved.

One type, in which the fungus envelops the developing lateral roots but does not penetrate the plant's cells, is called ectomycorrhizae. It is this type of association that is found in many of the trees that dominate the temperate forests of the world, most prominently in the *Pinaceae*, *Fagaceae*, *Betulaceae* and *Salicaceae*. In Minnesota, eight species of conifers and 24 species of angiosperms are known to form obligate ectomycorrhizal associations with fungi, including all oaks (*Quercus* spp.), pines (*Pinus* spp.), spruce (*Picea* spp.) and Balsam fir (*Abies balsamea*). The state tree of Minnesota (*Pinus resinosa*) would not exist without these beneficial fungi on its roots.

The fungi involved in these mutualistic associations are far more diverse than the plants. It has been estimated that more than 5,000 species of fungi forming ectomycorrhizal associations have been described! One prominent group of ectomycorrhizal fungi are called the “boletes,” based on the morphology of the reproductive structures (mushrooms) that they produce.

A bolete is a typical-looking fleshy, stalked mushroom, but with densely packed vertical tubes underneath the cap, rather than the gill-like structures of the stereotypical mushroom. These tubes give the underside of the cap an appearance similar to a sponge. It is inside of these cylindrical tubes where the numerous spores are produced, which, at maturity, are forcibly discharged into the air for dispersal by wind. When a spore lands in a suitable environment, it will germinate to produce filaments of cells known as hyphae. These hyphae are the form in which the fungus lives

most of its life. An aggregate of hyphae is known as a mycelium, which is the “body” of the fungus that resides in the soil and humus layers and, in ectomycorrhizal fungi, interacts with the roots of plants. Only when two suitable mycelial mates join with each other (fungal sex!) can a mushroom be produced, thus completing the life cycle of a mushroom-producing fungus.

In Minnesota, 20 of 50 known genera of boletes have been recorded. In contrast, we only have documentation for 9.4 percent of all described species of boletes. This low species diversity is partly on account of the limited biogeographic distribution of many boletes, but also largely a factor of very poor sampling. Clearly, more mushroom hunters are needed to better document Minnesota boletes. Some of the common Minnesota members include the often slimy-capped *Suillus*; the pink-spored, bitter-tasting *Tylopilus*; the kooky “Old Man of the Woods” (*Strobilomyces floccopus*); the blue-staining *Gyroporus cyanescens*; and the false truffle genus *Scleroderma*.

Minnesota also has the strange Midwestern endemic *Paragyrodon sphaerosporus* and one species that has been collected only once in the history of the world, *Suillus weaverae*, named in 1965 in honor of the avid mushroom hunter Peg Weaver.

One other notable group of boletes found in Minnesota are the gourmet edible porcini (genus *Boletus* section *Boletus*). There are at least three species known as porcini that are found throughout the state: the *Boletus nobilissimus* complex is found in oak forests in central and southern Minnesota; *Boletus edulis* var. *clavipes* is found with conifers, aspen, and birch in the boreal habitats of central and northern Minnesota; *Boletus subcaerulescens*, a rare species, has been documented from a single red pine (*Pinus resinosa*) plantation.

Floristic Quality Assessment for state wetlands being developed

by Scott Milburn

The Floristic Quality Assessment (FQA) was first introduced in the Chicago Region in an attempt to provide a standardized method for assessing the quality of natural areas. This methodology is additionally advantageous in that it can be used to assess restored areas, ecological quality between sites, and changes to floristic quality over time.

The FQA is based on native species conservatism or coefficient of conservatism (C-value). This C-value is a numerical gauge of species tolerance towards disturbance and habitat fidelity. The FQA provides two values, a mean coefficient of conservatism and a floristic quality index. The mean coefficient of conservatism is determined by calculating the average C-value for an area of interest. The floristic quality index incorporates the mean coefficient of conservatism in addition to species richness.

To determine the floristic quality index, all native species inhabiting the subject area or vegetative community are documented. Once the list is compiled, the C-values derived from the species list would be averaged and multiplied by the square root of the number of native species documented. The greater the mean C-value and Index value are, the higher the floristic integrity is.

The floristic quality assessment has already been implemented in Illinois, Indiana, Iowa, Michigan, Missouri, North Dakota/South Dakota, Ohio, and Wisconsin. The Minnesota Pollution Control Agency's Biological Monitoring Program (www.pca.state.mn.us/water/biomonitoring/index.html) is funding the project through a U.S. EPA wetland program development grant to develop a consistent and reliable method to monitor the quality of the state's wetlands. The C-values are currently being assigned by a panel of expert Minnesota botanists and should be completed this year. In addition to the development of C-values, updated species distribution maps will also be generated.

Pot your plants now for June 1 plant sale

by Ken Arndt

The annual MN NPS native plant sale will be June 1, following the meeting. Plants will be arranged outside of the main building, similar to previous years. Members are asked to bring native plants that they have propagated themselves from seed or division to the front of the building at 6 p.m. We need all plants to be potted individually and labeled with common and scientific names. Pricing will be done by the plant sale volunteers.

Now is the time to get out and divide your extra native plants as they start to emerge from the soil. The longer the plants can be potted up before the sale, the better the condition they will be in for the sale. We ask that only native plants be donated, not cultivars or other horticultural selections. In addition to members' donations of plant material, we will also be adding to this year's sale native plants from local nurseries that specialize in native plant material.

No out-of-state plants can be accepted unless they have been certified by the Department of Agriculture of the state in which they were grown. Minnesota has reciprocity with all other state departments of agriculture, so they will let in plants from other states if they were certified there.

A few volunteers are needed to help with setting up the sales area and assisting members with their plants. Once the sale begins, volunteers will be allowed to select plants first, followed by members who brought plants, and finally all other members and visitors.

Dave Crawford and Ken Arndt are co-chairs of the plant sale. To volunteer, contact Ken Arndt at karndt@pioneereng.com. or 651-251-0626.

Meet members at 6 p.m. social hour

by Anne McGee, Social Committee chair

On MN NPS meeting nights, skip your take-out food or home stop, and come right to the Wildlife Refuge at 6 p.m. for a healthy snack and friendly conversation. Our social committee is working to create an environment which is welcoming to new members and encourages getting acquainted, professional sharing, and exchange of native gardening ideas. We also like whole foods and a non-package/garbage emphasis. Bringing your own mug for your beverage will be appreciated.

When you arrive for the social hour, we will greet you and give you a name tag. Help yourself to a filling snack. Beverage will be provided, or select one from the pop machine in the entry. Beginning in May, we will have hot coffee or tea for those who bring their own mugs. Then join a table hosted by an experienced member, or mix and mingle until you head into the program at 7 p.m.

If you would like to join the social committee, call Anne McGee at 651-994-1956.

Garden with native plants

A class, "Using Native Plants in the Garden," will be taught at the Minnesota Arboretum from 10 a.m. to 12:30 p.m. Saturday, April 29. The instructor will be Douglas Owens-Pike. For more information, e-mail education@arboretum.umn.edu or call 952-443-1422.

Plant Lore

by Thor Kommedahl

What is wild ginger?

Wild ginger is *Asarum canadense*, a native plant of Minnesota in the birthwort family (*Aristolochiaceae*).

How did it get its names?

Asarum is an ancient Greek word of unknown derivation used by Dioscorides. Birthwort refers to its flowers, which resemble a swollen womb, and wort means the plant was once used in medicine. *Aristolochia*, in the family name, means birth-improver. Ginger refers to its taste resemblance to commercial ginger (no relation).

What does the plant look like?

The heart-shaped leaves of this low-growing perennial grow in pairs from the underground stem (rhizome), and both leaf blades and petioles are hairy. In the fork made by the paired leaf stalks, a solitary, reddish-brown flower is borne. Often hidden by leaves, the flower is detectable by its foul odor that attracts flies, to foster pollination, fungus-gnats, and other ground insects.

Where does wild ginger grow?

It grows in rich, moist woods, usually in colonies, throughout the state but is native in similar climates of North America, Europe, and Asia.

What are its medicinal uses, if any?

American Indians used root tea for colds and for uterine problems. Indian women used it to regulate menstrual cycles and for birth control, influenced by the womb-shaped flowers. Pioneers consumed it to ease gas formation and as a tonic. It contains the anti-tumor compound aristolochic acid.

Does it have any economic uses?

Dried roots have been candied or pulverized for use as a kitchen spice. It is a constituent of some snuffs. Wild ginger is planted in shaded wild gardens and to make a ground cover in shade. It can be propagated by division and by seeds.



Asarum canadense drawing and photo by Jason Husveth

Thank you, volunteers

by Ellen L. Fuge, Management Supervisor, Scientific and Natural Areas Program

I want to thank the Minnesota Native Plant Society (who've adopted Grey Cloud Dunes SNA) and all who showed up on Feb. 10 to cut and burn brush. Thirteen volunteers made the four-hour event very successful. These hard workers consolidated many small, unburnable piles into six burn piles. This cleared the area of brush that would have interfered with the prescribed burn planned for this spring. Additionally, they cut and burned more honeysuckle, the dominant exotic invasive shrub in the savanna that is being restored.

Thank you!

Back to Boot Lake SNA for Winter Botany

by Ken Arndt

On Saturday, March 11, a group of 15 MN NPS members enjoyed a morning of winter plant identification at Boot Lake Scientific and Natural Area, located in northern Anoka County. Field trip participants were led by Vice President Scott Milburn (botanist) and Board Member Ken Arndt (urban forester) through several different plant communities on the way to Boot Lake, including a tamarack swamp, mature hardwood forest, and stands of large white pine.

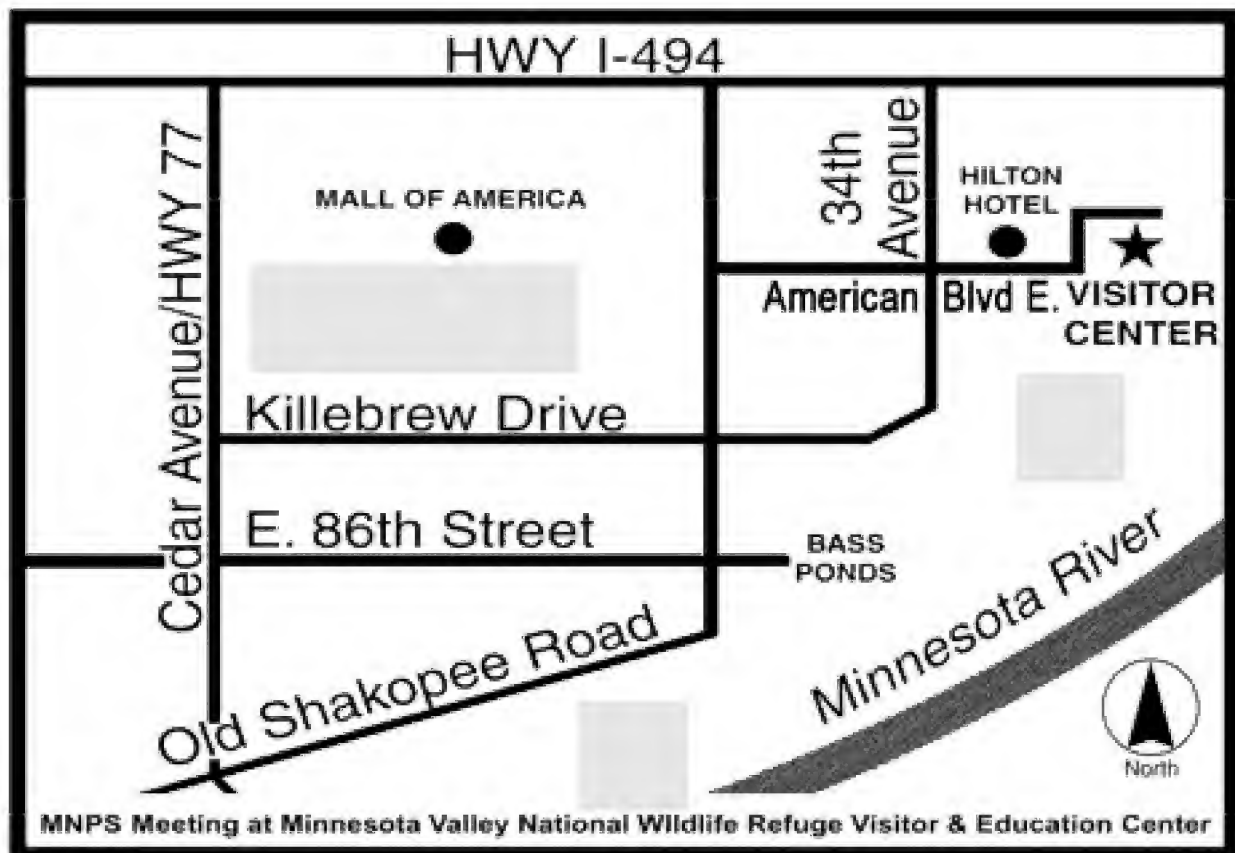
With temperatures in the 40s and very little snow cover, a sense of spring was in the air. The winter was gentle to the plants here, with several types of ferns still green from last year. Small herbaceous plants like goldthread (*Coptis groenlandica*) and bunchberry (*Cornus canadensis*) were clearly visible throughout the tamarack hummocks.

From the tamaracks, the group was led into a stand of mature white pine — one of the finest stands left in Anoka County. As we made our way through the woods, we were able to identify many different trees and shrubs by their buds, form, and other key winter characteristics.

We came across several areas that are part of a reforestation project where deer exclosures have been placed to encourage the regeneration of white pine. With the noted high deer population at Boot Lake, a long-term study like the one underway will provide valuable information about the deer's effect on the plants. After seeing water-willow (*Decodon verticillatus*) along the banks of Boot Lake, the group headed back through the forests and wetlands with an appreciation of the many different plant communities in this great SNA.

Minnesota Native Plant Society
P.O. Box 20401
Bloomington, MN 55420

Spring 2006





Minnesota Plant Press

The Minnesota Native Plant Society Newsletter

Volume 25 Number 4

Summer 2006

Monthly meetings

Minnesota Valley National Wildlife Refuge
Visitor Center, 3815 American Blvd. East
Bloomington, MN 55425-1600
952-854-5900

6:00 p.m. — Building east door opens
6:00 p.m. — Refreshments,
information, Room A
7 – 9 p.m. — Program, society business
9:00 p.m. — Building closes

Programs

The MN NPS meets the first Thursday in October, November, December, February, March, April, May, and June. Check the website for more program information.

Oct. 5: "Semi-Natural Grasslands for Biofuel and Ecological Services?" by Dr. Nicholas Jordan, professor, Department of Agroecology, Agronomy and Plant Genetics, University of Minnesota. **Plant of the Month:** to be determined.

Nov. 2: "The Importance of Native Plants in the Streamside Environment," by Brian Nerbonne, stream habitat specialist, MN DNR Central Region Fisheries. **Annual seed exchange.**

Dec. 7: "Growth Pressures on Sensitive Natural Areas in DNR's Central Region," by Sharon Pfeifer, regional planner, DNR Central Region.

Feb. 1: "Recent Highlights in the Minnesota County Biological Survey," by Carmen Converse, county biological survey supervisor, DNR.

MN NPS website

www.mnnps.org
e-mail: contact@mnnps.org

MN NPS Listserve

Send a message that includes the word "subscribe" or "unsubscribe" and your name in the body of the message to:
mn-natpl-request@stolaf.edu

Natural prairies hold key to sustainable fuels

By Deane Morrison. Reprinted with permission from UMNnews, University of Minnesota.

As gas prices inch higher, the search is on for renewable, plant-based fuels that don't require fertilizer or pesticides, which both require energy to produce.

A solution may be at hand, from University ecologist David Tilman and two colleagues: Instead of growing a single fuel-source crop, grow many species together, because such plantations yield more total vegetation — and do it more reliably — than any growing just one species.

The most cited ecologist in the world, Tilman has long been singing the praises of biodiversity, as the coexistence of many species is called.

In May, he and two colleagues (University forest resources professor Peter Reich and Johannes Knops of the University of Nebraska) published a paper in the journal *Nature* in which they sum up 12 years of experiments at the University's Cedar Creek Natural History Area. The longest-running experiment of its kind, it shows unequivocally that plots of land with numerous species produce much more "biomass" and suffer less from fluctuations in productivity than plots with only one or a few species. This makes diverse plantings the likeliest candidates to drive the "bio" revolution.

Think species diversity

The paper is a call to everyone who wants to extract energy from biomass to start thinking in terms of species diversity. Biomass can be either burned for energy or refined to produce concentrated energy in the form of biofuels, such as ethanol, or synfuel gasoline and diesel. The greater the yield of biomass per acre, the better, and data from Cedar Creek show that diverse plantings fill the bill.

"Diverse prairie grasslands are 240 percent more productive than grasslands with a single prairie species," says Tilman, a Regents Professor of Ecology in the

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From the president

by Scott Milburn

I would first like to start off by recognizing the great job done by our outgoing president, Jason Husveth. The Society has gained a good deal of momentum under Jason's leadership, focusing on exciting field trips, symposia, and monthly meetings, along with increasing membership numbers and revenue. Looking forward, it is important for the Society to keep focusing on what has led to this gain in interest while continuing to grow.

The Society is dependent on the involvement of our membership. Many members have been stepping up in the past few years to lead field trips and organize a social hour before the monthly meetings. In the next year, we should look for ways to maintain our existing members, increase our membership, and increase committee involvement by the membership.

We need to continue to offer our excellent services (programming and field trips), but we also need to modify how we deal with memberships. One idea that has been talked about for the past year at board meetings is to offer three-year

memberships, rather than having to renew each year.

Additionally, we need to look for ways to increase our membership numbers. One way that folks can help with this is to publicize the Society's monthly meetings by posting a list of meeting topics and times at your neighborhood plant nursery or grocery store. The Society must also increase committee involvement by the membership, including the Symposium Committee, Field Trip Committee, etc.

This upcoming year's monthly programming, symposium, and field trips look very promising. I would like to thank Linda Huhn for the great job she has done organizing speakers for this upcoming year. The Symposium Committee is also starting to prepare for next year's meeting, with several potential topics, including the Prairie Coteau. Furthermore, it looks like another good year for field trips under the direction of Ken Arndt. In closing, I am looking forward to this opportunity to serve as the president of the Society and welcome input from our members.

MN NPS Board of Directors

President: Scott Milburn,
president@mnnps.org

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Historian/Archives:
president@mnnps.org

Technical or membership inquiries: contact@mnnps.org

Minnesota Plant Press editor:
Gerry Drewry, phone, 651-463-8006; plantpress@mnnps.org

Updated plant identification CDs are now available

Flora ID Northwest, LLC announces that its Minnesota and Great Plains plant identification CDs for PCs have been updated. MN NPS members who have purchased either or both of these CDs can get the latest update for \$6 shipping and handling. Contact Bruce S. Barnes, Flora ID Northwest, LLC, 731 NW 5th, Pendleton, OR 97801; call 541-276-5547 (FAX 541-276-8405) or email: flora@uci.net

New users may purchase updated CDs from the Society at \$70 (Minnesota) and \$150 (Great Plains).

Minnesota Native Plant Society's purpose

(Abbreviated from the bylaws)

This organization is exclusively organized and operated for educational and scientific purposes, including the following:

1. Conservation of all native plants.
2. Continuing education of all members in the plant sciences.
3. Education of the public regarding environmental protection of plant life.
4. Encouragement of research and publications on plants native to Minnesota.
5. Study of legislation on Minnesota flora, vegetation and ecosystems.
6. Preservation of special plants, plant communities and scientific and natural areas.
7. Cooperation in programs concerned with the ecology of natural resources and scenic features.
8. Fellowship with all persons interested in native plants through meetings, lectures, workshops and field trips.

From the former president

by Jason Husveth, president, 2003 - 2006

Greetings members! I hope you are all enjoying Minnesota's native flora and wealth of natural areas during these warm summer months. I have had the honor of serving as your president for the past three years. With the help of an energized and talented board and enthusiastic members, we have accomplished a great deal in this time. I want to thank all of you for making my term as president so rewarding and, I hope, productive.

As many of you may know, a new slate of officers was elected at the June 2006 board meeting. Scott Milburn will be taking over the reins of president, and I am certain he will excel in this role.

Shirley Mah Kooyman was elected vice president, and her professional skills and considerable experience on the board will serve her and the society well. I am excited to see the new directions that our senior officers will take us.

After several years on the board and serving as secretary, Karen Schik has stepped down to pursue and develop local conservation initiatives in her community. Among her many contributions, Karen has served as an invaluable resource on the board and has volunteered countless hours to planning our annual symposia for the past several years. I wish to thank Karen for her exceptional service to the society. She will be missed (and called upon in a pinch).

Daniel Jones was elected as secretary and continues to offer his talents and passion to the society. Ron Huber will continue to serve as treasurer, and he and Cathy are doing a fine job at managing the society's assets and financial concerns. Ken Arndt continues to raise the bar with field trip planning and coordination, and will continue on the board.

Sandy McCartney is working on developing an annual scholarship for Minnesota students. Many thanks to Gerry Drewry for keeping us on task with the quarterly newsletter, and to Linda Huhn for coordinating fantastic speakers and topics for our monthly meetings.

It has been a pleasure to serve as your president for the past three years. I will continue serving on the board through 2007, and I look forward to helping the society grow well into the future.

Thank you!

Art Hawkins dies

Conservationist Art Hawkins, 92, died on his property at Lake Amelia March 9. As a United States Fish and Wildlife manager in Minnesota, Hawkins developed many of the research protocols and waterfowl management plans used by the agency. He was a member of the Commissioners Advisory Committee to Scientific and Natural Areas for almost 20 years.

Hawkins held a bachelor's degree from Cornell and a master's degree from the University of Wisconsin, where he worked under Aldo Leopold. He was one of Leopold's last surviving students.

Like Leopold, Hawkins restored his land to a wildlife preserve. Hawkins placed some of the first nesting platforms for osprey on his land and kept a diary or journal about the property for nearly 50 years.

The MN NPS has started a memorial fund for Art Hawkins. If you wish to contribute, make your check out to the Society, mark it for the Art Hawkins memorial, and mail it to Minnesota Native Plant Society, P.O. Box 20401, Bloomington, MN 55420.

Take an evening tour of Hastings Sand Coulee July 18

by Elizabeth Storey, river stewardship coordinator, Friends of the Mississippi River

Join Friends of the Mississippi River Vermillion Stewards for a prairie tour of the Hastings Sand Coulee Tuesday, July 18, from 6:30 – 8 p.m. Karen Schik, restoration ecologist for Friends of the Mississippi River (FMR), will introduce us to this rare dry prairie that has survived since the early 1800s. Karen prepared the stewardship plan that has determined the course of action for efforts to return the coulee to its pre-settlement condition.

Technically a sand-gravel prairie, this special place is home to several rare habitat types; endangered plant species including James' polanisia (*Polanisia jamesii*), sea-beach needle grass (*Aristida tuberculosa*), and kittentail (*Besseyia bullii*); and the threatened blue racer snake (*Coluber constrictor*). The 2.5-mile-long coulee is a former glacial stream valley identified by Minnesota County Biological Survey as one of the most biologically important sites in Dakota County.

Space is limited. To register, contact Elizabeth at Friends of the Mississippi River, estorey@fmr.org or 651-222-2193, ext. 16. This event is free of charge.

Newsletter is available by E-mail or regular mail

This newsletter is available in two formats — printed and e-mail. If you wish to change to the other format, just send an e-mail to memberships@mnnps.org or phone 651-739-4323.

Biodiversity

Continued from page 1

College of Biological Sciences, which operates the Cedar Creek field station. "That means that if a plot with one or two plant species produces 100 pounds of vegetation a year, a plot with 16 species [the most diverse plots planted at Cedar Creek] will produce 340 pounds. This huge advantage comes when you plant numerous grasses and legumes and various prairie flowers together."

Findings from Cedar Creek suggest that plantings of multiple species of prairie plants will produce fuels, such as ethanol, with greater net energy gains per acre than corn, soybeans, or even switchgrass, which has been touted as a promising source for biomass.

But the higher energy gains aren't just from higher productivity. Diverse plantings require little or no inputs of fertilizer or pesticides, both of which require lots of energy to make and apply. Experiments now under way in Germany and the Netherlands are yielding similar effects of diversity on yields, says Tilman, even though they use totally different species.

Also, because prairie plants are perennial, they would not have to be replanted year after year. Farmers would need only to mow their fields in the fall.

Biomass could replace some coal

If burned, biomass could replace some of the coal that now pumps carbon dioxide and mercury into the atmosphere.

"You can burn prairie grass using the fluidized bed technology of existing coal-fired power plants, and can mix it in with coal," says Tilman. "The energy density of biomass is 60 to 70 percent that of coal. If power plants wanted to buy biomass and farmers wanted to grow it, it could happen, but it will take much work to get there."

Now that the value of biodiversity has been shown, the next step should be an economic analysis, says Tilman. It remains to be seen whether biomass farmers, along with energy producers and the people who transport biomass from one to the other, can each make money if they put the vision that he and his colleagues have into practice. For optimal results, each region of the country and the world would have to be studied to determine what mix of plant species would work best in that particular soil and climate.

"In Minnesota, there are over a million acres of abandoned farmland in the Conservation Reserve Program," says Tilman. "That land is mainly planted with just a few grass species" and so may hold potential as a future site of biomass plantations.

Planting more species should allow not only bigger yields of vegetation, but more predictable yields. As the Cedar Creek experiments show, yields of vegetation fluctuate less from season to season if the vegetation contains many species. This kind of reliability is important, because no one wants to see boom and bust years in the energy supply.

"This paper suggests there might be an unsuspected benefit to restoring land to a more native condition," Tilman says. "Restoring land so it can produce biofuels is a new idea, but there are many reasons to do it. We need a stable and productive source of bioenergy. Biodiversity can give us this on abandoned agricultural land around the world, and it doesn't have to be just grasses. As we get away from fossil fuels, we're going to have to have a diversity of approaches."

Plant sale results

Treasurer Ron Huber reported net income from the June 2006 plant sale was \$789. Non-auction plants sold for \$749. Profit from the auctioned orchids was \$40. The late Tim Wallace's trees brought in \$73, which has been added to his memorial fund.

Hastings turns industrial park into a prairie

by Karen Schik

A drive on Eddy St. from downtown Hastings to Lock and Dam Number Two used to include a drive past a series of petroleum storage tanks owned by Flint Hills Resources. In 1995, the tanks were removed and a portion of the land was given to the City of Hastings. What was once an unsightly industrial park is now being slowly transformed into mesic prairie through a native planting completed in 2003 by Friends of the Mississippi River (FMR).

Although some Minnesotans are able to recognize the hallmark native plants of a wet prairie and meadow, others may only recognize the former tank farm as a grassy field. In an effort to raise consciousness of the area as a restoration site, the City of Hastings erected a sign welcoming visitors to the Hastings Nature Preserve.

In the spring of 2006, a group of Hastings High School students, in partnership with the city and FMR, planted native grasses and forbs around the sign. Now a sign surrounded by beautiful native plants will highlight the area and attract visitors even more effectively.

The project partners would like to thank the Minnesota Native Plant Society for the "Think Native" grant, which helped in purchasing the plant materials.

This was a great educational project for the students and something they can take pride in every time they pass the park. Getting students and other community members to participate in restoring their local natural areas is one of the best ways to ensure long-term protection of such areas.

Protecting native plants in southeastern Minnesota

by Daniel Tix, biodiversity area review team leader, MN Chapter of the Society for Conservation Biology

At this year's MN NPS annual symposium in April, we explored the incredible biological riches of the "land that glaciers forgot," the driftless area of southeastern Minnesota and adjacent portions of Wisconsin and Iowa. For native plant enthusiasts, this region is a treasure trove of rare species and interesting native plant communities.

It is also a region whose management could significantly benefit from the input of Native Plant Society members. In fact, there have been few better opportunities for those interested in native plant conservation to inform management decisions impacting rare plants and diverse native plant communities.

In southeastern Minnesota, the County Biological survey highlighted 13 areas with biological values that merit special protection on state lands. Having been selected from 917 sites surveyed in six counties of southeastern Minnesota, these are truly exceptional areas for their large concentrations of rare species and highest quality examples of the rare native plant community types.

These communities include moist, moderate cliffs, algific talus slopes, dry oak savanna, maple-basswood forest, and northern hardwood-conifer forest and occur on land already owned by the Minnesota Department of Natural Resources. Rare plant species include false mermaid (*Floerkea proserpinacoides*), goldenseal (*Hydrastis canadensis*), Jame's sedge (*Carex jamesii*), and rough-seeded fameflower (*Talium rugospermum*).

As part of regional forest management planning, the DNR is

writing plans to guide management of these areas. The draft plans have proposed such management activities as timber harvest, prescribed burns, and set aside of small areas around rare species. In some cases, especially in the forested communities, proposed management will unduly jeopardize the quality of some of the highest quality native plant communities in the region.

The public comment period on these management plans presents a significant opportunity for MN NPS members to voice support for strong protection of native plant species and communities. Voicing support is as easy as reading an 8- to 12-page draft management plan and writing a comment letter during the 30-day public comment period. Unlike many other issues, these plans receive few comments, so each letter can be very important. Six plans have already been completed, but seven are still to be released for public comment.

If you are interested in reviewing these plans, go to www.dnr.state.mn.us/forestry/subsection/blufflands/index.html. From this link, you can e-mail Jon Nelson and ask to be notified about the public comment period for each high biodiversity area management plan in southeastern Minnesota. If you would like more information or talking points to inform your comment letter, feel free to contact me at dtix@greatrivergreening.org.

Seedling plant guide will be printed in August

The *Prairie Seedling & Seeding Evaluation Guide* will be available in August 2006. It is expected to cost about \$5, plus shipping and handling and will be available through the Bonestroo & Associates website. For additional details, contact author Paul Bockenstedt at 651-604-4812 or pbockenstedt@bonestroo.com.

Botany

by Berton Braley, "Science News Letter," March 9, 1929

There should be no monotony
In studying your botany;
It helps to train
And spur the brain —
Unless you haven't gotany.

It teaches you, does Botany,
To know the plants and spotany,
And learn just why
They live or die —
In case you plant or potany.

You learn, from reading Botany,
Of wooly plants and cottony
That grow on earth,
And what they're worth,
And why some spots have notany.

You sketch the plants in Botany,
You learn to chart and plotany
Like corn or oats —
You jot down notes,
If you know how to jotany.

Your time, if you'll allotany,
Will teach you how and whatany
Old plant or tree
Can do or be —
And that's the use of Botany!

Note: Thor Kommedahl submitted this poem, which he found in his files.

Bluffland management guide is available

Conserving Your Blufflands, a management guide for the St. Croix River bluffs, has been completed by Great River Greening ecologists. Its goal is to help decision-makers and landowners conserve the bluffs' ecological value and beauty and help halt the decline of the water quality.

Great River Greening developed the guide under a contract with the Minnesota DNR. It will be distributed by the DNR and the National Park Service in the St. Croix Valley. Copies are available through the DNR Information Center, 651-296-6157 or 888-MINN DNR, and from Deb Gagner at Great River Greening, 651-665-9500, ext. 10, or dgagner@greatrivergreening.org.

Plant Lore

by Thor Kommedahl

What is mad-dog skullcap?

Mad-dog skullcap is *Scutellaria lateriflora*, a Minnesota native plant in the mint family.

How did it get its names?

It was reported in the 1770s as a cure for rabies; hence, the name mad-dog. Skullcap refers to the flower shape, which resembles a helmet with the visor raised. *Scutellaria* means dish, referring to the pouch on the fruiting calyx. *Lateriflora* refers to the one-sided flower racemes borne in leaf axils.

Where does the plant grow?

It grows in moist woods, meadows, and swampy areas throughout the state.

What do plants look like?

They are perennials; one to three feet tall; paired, opposite, toothed leaves on four-sided stems; and have slender rhizomes. Its blue (sometimes, pink, violet, or white) flowers appear in one-sided racemes from leaf axils (distinguished from common skullcap which has a single bloom in the axil). It flowers from July to September.

Has it any medicinal value?

Its use for rabies treatment has since been discredited; however, plants contain scutellarin, a flavonoid with sedative and antispasmodic properties. It has been used for treatment of epileptic seizures. Skullcap was once listed in the *US Pharmacopeia* and the *National Formulary* for treatment of nervous disorders.

Is it poisonous?

Not likely. Where cases of toxicity have been reported, the poisoning has been attributed to adulterants such as wood sage added to commercial supplies of skullcap.

Restoration of Arden Hills site studied

by Wade J. Hammer, wetland ecologist, Svoboda Ecological Resources. This is an abstract of his talk at the April 6 meeting.

The Arden Hills Army Training Site (AHATS) is a 1,786-acre military installation in Arden Hills, Minn. It is located in Township 30N, Range 23W, within Sections 9, 10, 15, and 16 in Ramsey County. The Original Land Survey, completed in the late 1800s, makes note of bur oak and white oak woodlands, with some tamarack swamps in the low areas in the approximate vicinity of the property.

Thirty home sites were displaced when the land was purchased in 1941 by the federal government for use as a military installation. The majority of the construction at the site began prior to World War II. Active munitions production took place there for 22 years, through the Vietnam War. At its peak, 26,000 people were employed as part of the military munitions facility. Due to the industrial use of the site and the solvents discarded on the property, it was listed as a superfund site in 1983. Clean-up of remnants of the industrial production at the site continues.

Tallgrass prairie restoration projects have occurred at the AHATS since the early 1990s. As part of a masters of science project, a study assessing the relationships among management (seeding and burning), vegetation, and environmental factors (soil, aspect, and slope) was completed.

The study included completion of 75 vegetation surveys, consisting of three random plots in 25 purposively placed grids. The surveys consisted of cover class data for all plant species. The surveys were completed

twice during the summer of 2002 (late June/early July and mid-August). Multivariate statistical analyses of the vegetation survey data revealed relationships between vegetation and soil texture, vegetation and shallow depth to ground water (within one meter), and individual plant species and fire frequency. The intended use of the findings is to improve management of designated tallgrass prairie restoration sites at the AHATS.

Pale or cream gentian

This is a summary of the April 6 Plant-of-the-Month talk by Wade J. Hammer

Gentiana flavida, pale or cream gentian, grows one to three feet tall and is typically unbranched. The leaves and stems are yellowish-green and glabrous; the flowers are cream or white. It is found in moist prairies and open woodlands in the Upper Midwest and Great Lakes states.

Pale gentian flowers in late summer to early fall, and bumblebees are its primary pollinators. Its small seeds are dispersed by wind and water.

Bob Djupstrom retires as head of SNA program

Bob Djupstrom retired March 2 as head of the Scientific and Natural Areas Program. He led it for 24 of its 33 years and oversaw the acquisition of 125 of its 140 sites. The program now encompasses 184,635 acres — more protected acreage than any other state.

In the SNA newsletter, Bob sent “an open thank you to the many folks who volunteered their time and energy to the SNA program over the years. I hope the cadre of volunteers out there will continue, will expand, and take an even greater interest in preserving our existing sites as well as assisting in having new sites established.”

Hastings High School, Oakdale receive grants

by Karen Schik

The Minnesota Native Plant Society has awarded two Think Native Grants.

Hastings High School Biology Class

A \$200 grant was awarded to Joe Beattie's biology class for the purchase of native plants to install in a prairie planting at the entrance to the Hastings River Flats Park. Beattie's students have worked on a lakeshore planting at the same location in the past two years, as well as other restoration projects in Hastings.

As part of a class project, they installed prairie plants at the site entrance and will return to help weed and water them over the next year. The City of Hastings will maintain

Nature exhibits at Bell Museum

Botanical art and Jim Brandenburg's prairie photos are featured in exhibits at the Bell Museum of Natural History, University of Minnesota.

"Bloom," an exhibit of botanical art, will be on display at the museum through Aug. 27. It features approximately 60 drawings, paintings, prints, books, botanical models, and fine crafts from public and private collections.

the planting in the long term. Friends of the Mississippi River, which has conducted the restoration work at the park since 2003, will manage the grant and oversee the project.

City of Oakdale

The City of Oakdale received the leftover plants from the plant sale and will receive the leftover seed from the seed exchange to be used at their restoration sites. They will utilize them to enhance the public wetland buffer areas adjacent to the community streetscape projects and/or as ground cover materials in their buckthorn removal areas. The contact person is Ron Rogstad, administrative services director, City of Oakdale.

"Bloom" includes magnificent hand-colored prints and books from the golden era of botanical art in the 18th century; stunning botanical wall charts, beautiful in themselves and an important means of teaching plant science; and contemporary drawings and paintings that exemplify the living traditions of botanical art as well as imaginative interpretations of plants and ecosystems.

"Touch the Sky," an exhibit of Jim Brandenburg's photos of the American prairie, will be displayed from Oct. 1 – Dec. 31. This exhibit is a tribute to the vistas and creatures that live in the tallgrass prairies of Minnesota, Nebraska, Iowa and North and South Dakota.

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\$15 Individual

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\$8 Student (full time)

\$8 Senior (over 62 or retired)

\$20 Institution

The membership year starts Oct. 1. Please fill in this form and check the appropriate membership category. Make your check payable to the Minnesota Native Plant Society. Bring the completed form and your check to the October meeting, or mail them to the Minnesota Native Plant Society, P.O. Box 20401, Bloomington, MN 55420.

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